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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/686.704	10/17/2003	Hisaki Kurashina	117086	8807
25944	7590	11/30/2006	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			NGUYEN, THANH NHAN P	
			ART UNIT	PAPER NUMBER
			2871	

DATE MAILED: 11/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/686,704

Applicant(s)

KURASHINA ET AL

Examiner

(Nancy) Thanh-Nhan P. Nguyen

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5, 6, 8-13 and 15-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 6, 8-13 and 15-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

**Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1-3, 5, 6, 8-13 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato (U.S. 2002/0018278) in view of Yang (U.S. 5,429,962), Yamasaki et al (US 2003/0202267) and Zhang et al (US 6,396,470).**

**Regarding claims 1, 5, 6, 9, 10 and 17, Sato discloses (figs. 1, 3, 17) an electro-optical device comprising:**

- a first substrate (10)
- a second substrate (20)
- a liquid crystal layer (50) disposed between the first and second substrate
- a data line (6a') extending in a first direction
- a scanning line (3a) extending in a second direction and intersecting the data line
- a pixel electrode (9a) and switching element (30) disposed so as to correspond to an intersection region of the data line and the scanning line, the pixel electrode being formed from an transparent material
- a storage capacitor (70') electrically connected to the thin film transistor and the pixel electrode
- a light shielding layer (300') disposed between the data line and the pixel electrode

- an interlayer insulating film (43) disposed as the base of the pixel electrode
- a contact hole (85) formed in the interlayer insulating film
- a relay layer (71a') formed below the interlayer insulating film and electrically connecting the pixel electrode to the switching element

Sato lacks discloses the relay layer having a two-layered structure including two metal layers; wherein one of the metal layers of the relay layer being formed from a light-absorbing material and the other of the metal layers being formed from a light-reflecting material; and further lacks discloses the data line being formed of the same film as one of a pair of electrodes constituting the storage capacitor; wherein the data line being a laminated structure of an aluminum film and a conductive polysilicon film .

It was well know to have a layer (relay layer/data layer) formed of a two-layered structure including two metal layers as for preventing breakage of the layer as evidenced by Yang [col. 3, lines 66-68; col. 4, lines 1-16 & lines 37-42]. Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have the relay layer or/and the data line formed of a two-layered structure including two metal layers as for preventing breakage of the layer. Further, the data line being formed of the same film as one of a pair of electrodes constituting the storage capacitor achieves advantages such as cost reduction, product yield, as a common goal in the art, and the relay layer being formed from a light-absorbing material and the other of the metal layers being formed from a light-reflecting material as two-layered structure data line material would have been achieved the same advantages.

Sato further lacks disclosure of a coating member coating an inner side wall of the contact hole, the coating member being made from a light shielding and electrically conductive material, the coating member being contained completely within the contact hole; a filler completely filling an inner space within the coating member, the filler being made from a transparent material and having a substantially planar upper surface in direct contact with the liquid crystal layer, wherein the filler being formed on the coating member.

Yamasaki et al discloses a coating member (402) coating an inner side wall of the contact hole (87), the coating member being made from a light shielding and electrically conductive material, the coating member being contained completely within the contact hole; a filler (416a) completely filling an inner space within the coating member, the filler being made from a transparent material and having a substantially planar upper surface in direct contact with the liquid crystal layer, wherein the filler being formed on the coating member, (fig. 5), for the benefit of reducing manufacturing cost (par. 0110). Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have a coating member coating an inner side wall of the contact hole, the coating member being made from a light shielding and electrically conductive material, the coating member being contained completely within the contact hole; a filler completely filling an inner space within the coating member, the filler being made from a transparent material and having a substantially planar upper surface in direct contact with the liquid crystal layer, wherein the filler being formed on the coating member for the benefit of reducing manufacturing cost.

**Regarding claim 2**, Sato lacks disclosure of the surface of the interlayer insulating film being planarized. However, it was well known to have the surface of the interlayer insulating film being planarized for the benefit of flattening or leveling the substrate, as evidenced by Zhang et al, [fig. 16]. Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have the surface of the interlayer insulating film being planarized for the benefit of flattening or leveling the substrate.

**Regarding claim 3**, Sato discloses another contact hole (83) being formed in another interlayer insulating film (41, 42), and the entire region inside the other contact hole being filled with the filler, [fig. 17].

**Regarding claim 8**, Sato discloses the contact hole being formed in light-shielding regions corresponding to a position in which the scanning line and the data line is formed, [fig. 17].

**Regarding claim 11**, Sato discloses a relay layer (71a') being electrically connected between one of the pair of electrodes constituting the storage capacitor and the pixel electrode, [fig. 17].

**Regarding claim 12**, Sato et al discloses the data lines including main line portions which extend above the scanning lines so as to intersect the scanning lines; a counter electrode (21) facing the plurality of pixel electrodes (9a) being formed on a counter substrate (20) disposed to face the substrate; convex portions being formed in regions which are to be gaps between the pixel electrodes, [fig. 17].

Even though Sato lacks disclosure of the overhang portions, which overhang from the main line portion along the scanning line, wherein the overhang portions including a shielding layer, it would have been obvious to one ordinary skill in the art to have the overhang portions including a shielding layer for blocking the light that might reflect from the scanning line, and therefore preventing the deterioration of the image display. Therefore, at the time the invention was made, it would have been obvious to one ordinary skill in the art to have the overhang portions along the scanning line including a shielding layer for blocking the light that might reflect from the scanning line, and therefore preventing the deterioration of the image display.

Sato further lacks disclosure of a first pixel electrode group inversely driven in a first period and a second pixel electrode group inversely driven in a second period complementary to the first period. However, it was an intended use limitation and therefore does not patentably distinguish the invention.

**Regarding claim 13**, since claim 13 included limitation "the convex portions have gentle surface step differences caused by removing the planarized films formed on the convex portions by an etching process and causing the surface of the convex portion exposed after removing the planarized films to recede", it makes the claim become a product-by-process claim, [MPEP 2113]. Since the process limitation does not affect the structure of the device, claim 13 is examined as the product claim itself, and therefore, claim 13 is met the discussion regarding claim 12 rejection above.

**Claim 15** is met the discussion regarding claim 2 rejection above.

**Claim 16** is met the discussion regarding claim 1 rejection above.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-3, have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to (Nancy) Thanh-Nhan P. Nguyen whose telephone number is 571-272-1673. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on 571-272-1787. The fax phone number for



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the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

(Nancy) Thanh-Nhan P Nguyen  
Examiner  
Art Unit 2871

TN



David Nelms  
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